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(54) LIQUID CRYSTAL ELEMENT AND METHOD FOR DRIVING THE SAME

(57)Abstract:

PROBLEM TO BE SOLVED: To lower a bending voltage and the holding voltage of bending alignment by providing at least one alignment layers of substrates with perpendicular alignment layer regions for partially aligning liquid crystal molecules in such a manner that the major axis of the liquid crystal molecules is aligned by having a specific angle with the substrate plan and impressing the bending voltage on the liquid crystals in the regions exclusive the regions described above, thereby forming the alignment state of causing the bending alignment.

SOLUTION: At least one alignment layer of the substrates of the liquid crystal element have a pair of the substrates having the alignment layers at the boundary between the electrodes for impressing the voltage to the liquid crystals and a liquid crystal layer and the nematic liquid crystal layer held between the substrates. At least one alignment layers of the substrates have the perpendicular alignment layer regions for aligning the liquid crystal molecules in such a manner that the major axis thereof has the angle of 80 to 90° with the substrate plane. The bending voltage is impressed to the liquid crystals in the regions exclusive of the perpendicular alignment layer regions, by which the alignment state of causing the bending alignment is obtd. The bending voltage and the holding voltage may be drastically decreased with the liquid crystal element which makes display by using the bending alignment according to such constitution.